



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/IT90/00093</p> <p>(22) International Filing Date: 12 November 1990 (12.11.90)</p> <p>(30) Priority data: 36087 B/89 7 December 1989 (07.12.89) IT</p> <p>(71)(72) Applicant and Inventor: ROTOLI, Antonio [IT/IT]; Via Trionfale, 76, I-00195 Roma (IT).</p> <p>(74) Agent: DI GIOVANNI, Italo; Ufficio Brevetti Dott. Ing. Digiovanni Schmiedt, Via Aldrovandi, 5, I-20129 Milano (IT).</p> <p>(81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CM (OAPI patent), DE, DE (European patent), DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), GR, GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US.</p>		<p>Published With international search report.</p>
<p>(54) Title: CLEANING AND DISINFECTING CARPET</p> <div data-bbox="316 1207 1356 1690"> </div> <p>(57) Abstract</p> <p>Device (9) which, when passed across, disinfects and cleans those parts of persons, animals and objects that come in contact with the ground, especially shoe soles, comprising a shallow tray (10) containing a moderately elastic grating (12) and a flat spongy body (11) below impregnated with disinfecting and detergent liquid, pressure being applied to the spongy body when the grating over this is depressed due to pressure being in turn applied to said grating, the spongy body then being squeezed and yielding some of its liquid which, through the grating, wets the above parts in contact with the ground, especially the soles of shoes.</p>		

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**CLEANING AND DISINFECTING CARPET**

DEVICE WHICH, WHEN PASSED OVER, DISINFECTS AND CLEANS THOSE PARTS OF PERSONS, ANIMALS AND OBJECTS IN CONTACT WITH THE GROUND, ESPECIALLY THE SOLES OF FOOTWEAR

The invention concerns a device for disinfecting and cleaning those parts of persons, animals and objects generally that come in contact with the ground.

It is known that much dirt is present on the surfaces of roads and outside areas, dirt that includes animal excrement, residue of edible materials and other organic substances likely to harbour bacterial flora, viruses etc. Dirt of this kind can easily cause serious diseases of a contagious nature.

Good habits of hygiene include washing and disinfecting the hands, the mouth and the whole body, cleaning clothes, habitations, carpets and shoe uppers but little attention is paid to the soles of footwear and those parts of objects in contact with the ground.

Shoe soles in particular spontaneously pick up infected material which is then carried into homes, offices, hospitals, public places and wherever people walk in.

Inside buildings the temperature is regulated for human comfort but at the same time this warmth is perfect for the growth of bacteria and viruses which develop rapidly and spread throughout the environment with harmful effects.

The same drawbacks apply to the passage of animals and any rolling means such as the wheels of wheel-chairs, trolleys and the like all of which carry in dirt from outside on feet and wheels.

The above invention eliminates or lessens such serious drawbacks as will be explained below.

The invention comprises a shallow tray containing a flat spongy body and a moderately elastic grating over it whose upper

surface is practically level with the edges of the tray.  
Said spongy body is impregnated with liquid disinfectant.  
The passage of some object over it, especially the tread  
of a foot, therefore depresses the grating and exerts  
5 pressure on the spongy body making it yield to such ob-  
ject or foot some of its disinfecting liquid through the  
grating thus wetting said objects especially the soles of  
footwear.

The tray may advisably be inserted in a 'window' of the  
10 same size made specially in an ordinary doormat.

For greater stability the sides of the tray are channel-  
-shaped with a constant C-type cross section facing out-  
wards.

The edges of the cut-out 'window' in the doormat are fit-  
15 ted into said channel.

To impregnate the spongy body, disinfecting liquid can be  
poured directly onto it.

Alternatively impregnation can be made by means of a con-  
tainer of disinfectant placed close to the perimeter of  
20 the device or in any case close to the tray.

Said container can comprise a means for slow automatic  
distribution of the disinfecting liquid to the spongy layer  
through a connecting tube or in some other way.

Alternatively distribution may be brought about by a spe-  
25 cial means operated by pressure from the grating when it  
in turn is pressed by bodies passing over it.

Alternatively the tray may be of greater extension than  
that of the spongy body associated to the grating above it.  
The tray area extending beyond the spongy body is covered  
30 by a rigid diaphragm a short way above the bottom of the  
tray.

Said diaphragm carries on it a doormat, and the like, placed round the perimeter of the spongy body and its grating.

The purpose of all this is to create around said spongy body a container of liquid for continuous supply to said  
5 spongy body to renew the liquid lost at each passage across it of persons, animals or objects.

Preferably the horizontal diaphragm is a net, and the like, mounted a short way above the bottom of the tray and kept in position by spacers.

10 The advantages of the invention are clear.

A drastic reduction is made to the disadvantages caused by contact between the ground and parts of persons, animals and objects, said parts constituting continuous contact between roadways outside and indoor environments.

15 A simple and effective method is offered to prevent transfer of bacteria and virus present in outdoor dirt inside inhabited places.

All this can be secured by a low-cost easily-installed method involving no complex operations since disinfection  
20 occurs in practice by passage of objects and tread of feet. Characteristics and purposes of the invention will be made even clearer by the following example of its execution illustrated by diagrammatic figures.

Fig.1 Perspective view of the invented device.

25 Fig.2 Transversal section of the same device.

Fig.3 Perspective view of the device fitted into a doormat.

The device 9 comprises the shallow tray 10 containing a flat spongy body 11 and grating 12 above it, flush with  
30 the top edge of the tray and made of moderately elastic material.

The sides 14 of said tray 10 are C-shaped opening outwards

to receive the edges of the four-angled 'window' 15 cut into a doormat 13 of the normal kind.

Disinfecting liquid is poured into the tray until the spongy body 11 is impregnated with it.

- 5 Thus fitted up the doormat 13 is placed at the entrance to an indoor environment or at some point of access to said environment.

The weight of a person treading on the grating in said doormat depresses said grating 12 and thereby compresses the  
10 spongy body 11 which consequently releases a part of the disinfecting liquid through the grating and onto the sole of the person's footwear.

Then, treading on the doormat 13 which surrounds the tray 10, the soles will leave upon it the already disinfected  
15 impurities and can therefore safely walk on indoor floors without fearing the effects of bacteria present in dirty surfaces of roads or any place open to the public.

CLAIMS

1. Device which, on passing across it, disinfects and cleans those parts of persons, animals and objects in general that come in contact with the ground, especially the soles of footwear,
- 5 characterized in that it comprises a shallow tray (10) containing a flat spongy body (11) upon which is a moderately elastic grating (12) whose upper plane is practically flush with the edges of the tray, said spongy body (11) being im-
- 10 pregnated with disinfecting liquid so that when said grating (12) is trodden on or slid over the relative weight deforms the grating causing it to press on the spongy body (11) which consequently yields part of the liquid it contains through said grating (12) thus wetting the sole of
- 15 the shoe that has pressed it.
2. Device as in claim 1,
- characterized in that the disinfecting liquid is also a detergent.
3. Device as in claim 1,
- 20 characterized in that the tray (10) is inserted in a specially made 'window' (15) of about the same size cut in a doormat (13).
4. Device as in claim 1,
- characterized in that the tray (10) is fitted into a
- 25 'window' (15) specially made of about the same size in a doormat (13) the sides of the tray being in the form of a channel with a constant C-shaped cross section opening outwards into which the edges (16) of the 'window' (15) become inserted.
- 30 5. Device as in claim 1,
- characterized in that the spongy body (11) is impregnated by the liquid being poured directly onto it.

6. Device as in claim 1,  
characterized in that the spongy body (11) is impregnated  
from a container of liquid placed close to the perimeter  
of the tray (10) or in any case near to said tray, said  
5 container being provided with a means for slow automatic  
release of liquid to the spongy body (11) through a con-  
necting tube or some other means.

7. Device as in claim 1,  
characterized in that the spongy body (11) is impregnated  
10 from a container of liquid placed close to the perimeter  
of the tray (10) or in any case near to said tray, said  
container being provided with a means that determines  
distribution of the liquid to the spongy body (11) when  
pressure is exerted on the grating (12) by persons, ani-  
15 mals or objects.

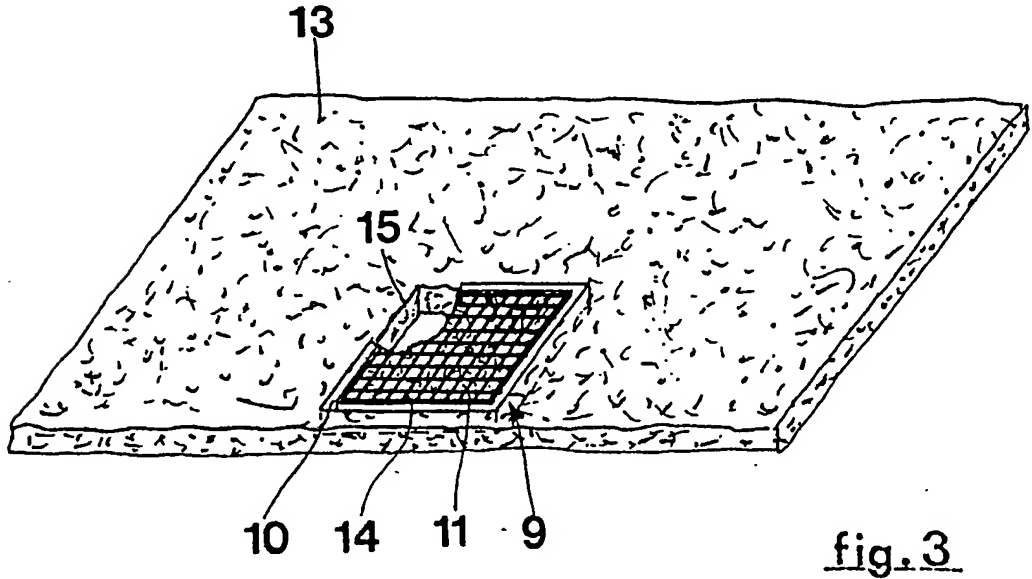
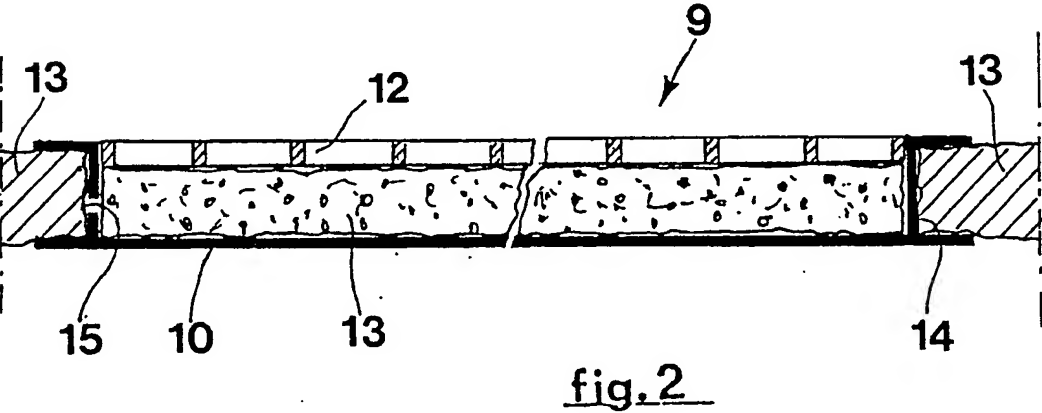
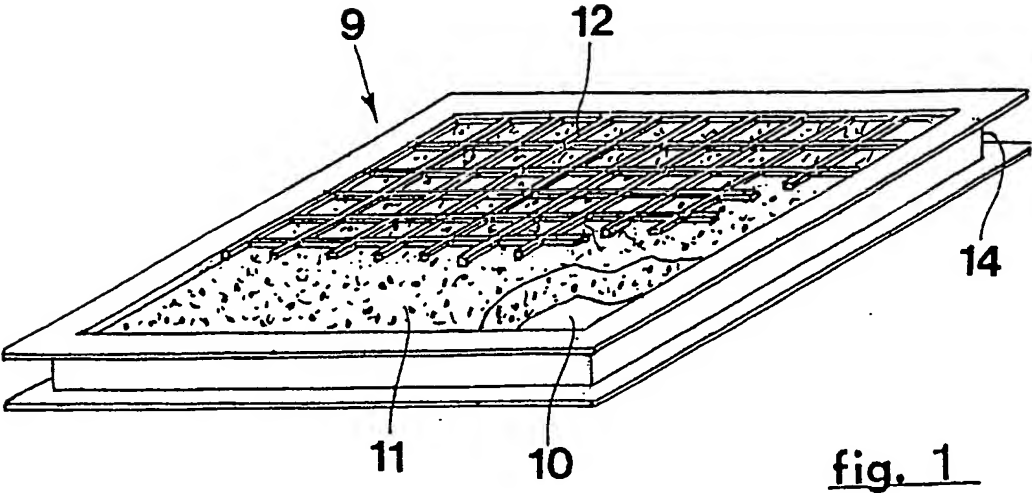
8. Device as in claim 1,  
characterized in that the space covered by the tray is  
greater than that of the spongy body with grating over  
it, the area of said tray which is not below the spongy  
20 body (11) being covered by a rigid diaphragm, a short  
distance above the bottom of said tray, that supports  
a doormat, and the like, placed around the perimeter of  
the spongy body (11) with grating (12), the purpose of  
this being to create around the spongy body (11) a con-  
25 tainer of liquid for constant supply to said spongy body  
so as to replace the liquid it loses whenever pressed by  
persons, animals or objects.

9. Device as in claim 1,  
characterized in that the horizontal diaphragm is a net  
30 or something similar.

10. Device as in claim 1,  
characterized in that spacers keep the diaphragm a short  
distance above the bottom of the tray.



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# INTERNATIONAL SEARCH REPORT

PCT/IT 90/00093

International Application No

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. 5                      A47L23/22		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
Int.Cl. 5	A47L	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	BE,A,890907 (J.A. GOMES DE NORNHA PENAGUIAO) 15 February 1982 see the whole document ---	1-5, 9-10
X	US,A,3696459 (A.J. KUCERA & AL) 10 October 1972 see the whole document ---	1-5, 9-10
X	EP,A,60148 (P. DESPLANQUE) 15 September 1982 see the whole document ---	1-5, 9-10
X	US,A,2989965 (R.L. ROD) 27 June 1961 see the whole document ---	7, 8
X	DE,A,2639289 (I.DROBA) 02 March 1978 see the whole document ---	1
X	FR,A,2555035 (G. CAVE) 24 May 1985 see the whole document ---	1
-/--		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <sup>10</sup> Special categories of cited documents :            "A" document defining the general state of the art which is not considered to be of particular relevance            "E" earlier document but published on or after the international filing date            "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)            "O" document referring to an oral disclosure, use, exhibition or other means            "P" document published prior to the international filing date but later than the priority date claimed         </div> <div style="width: 45%;">           "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention            "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step            "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.            "&amp;" document member of the same patent family         </div> </div>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
04 FEBRUARY 1991	18 FEB 1991	
International Searching Authority  EUROPEAN PATENT OFFICE	Signature of Authorized Officer  VANMOL M.	

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
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**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.**

IT 9000093

SA 41810

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.  
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US-A-2989965		None	
DE-A-2639289	02-03-78	None	
FR-A-2555035	24-05-85	None	
FR-A-2631532	24-11-89	None	